

Media Technology Center 2019

AT A GLANCE



Founded in March 2019



7.3 FTE and growing



Project start June 2019

Applied Research Projects



Hands-free Media



Federated learning



Swiss Voice Assistant

Exchange of Ideas



Public lecture series & Student seminar



Hosted 18 students
8 completed BS & MS theses

Find more details about our activities on the web: mtc.ethz.ch

The Center Opens its Doors

The Media Technology Center (MTC) is part of the ETH Media Technology Initiative. The center was newly established in 2019 to **foster applied research together with partners from the media industry**. The center became operational in March 2019 with an approved budget of 5 Million CHF over five years (annual budget 1 MCHF). A steering committee consisting of experts from industry and academia governs the center.

The focus during the initial ten months was to build up a **strong foundation for running projects** together with industry partners, to build an **initial project portfolio** and to **stimulate exchange between researchers, students and industry experts** in the field of media technology.

Excellent Foundation

The foundation for all the work at the center is the **steering committee that consists of 14 experts from industry and academia**. The committee met three times in 2019 to **establish the strategic direction of the center**, to evaluate 13 project proposals and to recommended three projects to fund (project details next page). Benefiting from the member's **strong network and expertise**, the center is ready to help tackle the challenges in media technology. The current members of the committee are listed below:

Industry. Isabelle Schrills (Ringier), Thomas Gresch (Tamedia), Gert von Manteuffel (SRF), Cristina Kadar (NZZ), Andreas Häuptli (Verband Schweizer Medien)

Academia. Prof. Dr. Markus Gross, Prof. Dr. Otmar Hilliges, Prof. Dr. Thomas Hofmann, Prof. Dr. Andreas Krause, Prof. Dr. Friedemann Mattern, Prof. Dr. Olga Sorkine-Hornung, Prof. Dr. Ce Zhang (ETH Zürich)
Prof. Dr. Martin Zimper (ZHdK)
Dr. Donald Tillman (ETH Zurich Foundation)

Year of Growth

Over the course of 2019, the center **has grown from 0 to 8 employees** (7.3 full-time equivalents). We are especially pleased that we were able to attract experts from a **broad range of expertise**, which is needed to run the interdisciplinary research at the center. We built up a **team of international researchers**, consisting of experienced researchers (postdocs), research engineers, and a Ph.D. student. Researchers at the center are experienced in computer vision, computer graphics, natural language processing, recommender systems, user modeling, and machine learning in general.

In June 2019, **the center launched the first three major projects** with each of our industry partners as the leading house for one of the projects. More details on our project portfolio on the next page.

A Platform for Exchange

The center hosted a **lecture series** in the fall of 2019. In six talks, experts from academia and industry shared their knowledge and experience at the **intersection of technology, journalism, and design**. Our speakers covered a range of exciting topics from the digitalization of media to automation of journalism. All lectures were open to the public. The talks were overall well-attended, with an average of 40 participants per talk.

A fully-booked **student seminar**, hosted by the MTC, introduced **24 computer science students** to the latest research in the field of media technology and innovation. It covered the exciting area lying at the intersection of computer vision, computer graphics, natural language processing, and machine learning. The **seminar covered a broad spectrum of topics** considering not only the technical innovations but also the possibilities these technologies provide to professionals in the media industry and consumers of media.

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Project Portfolio 2019

At the beginning of the year, workshops with all our industry partners yielded **13 project proposals** covering a broad range of topics within the field of media technology. Topics from how to source & capture content to technologies for production & creation of different media formats and new

methods for dispatching media and personalizing consumption. From this broad range of topics, three **proposals have been selected** by the Steering Committee, based on the scientific quality, the relevancy for our industry partners and the cross-company benefit of the project.

Foundations for Hands-free Media

Smart glasses and augmented reality (AR) headsets provide the opportunity for **radically new ways of media consumption**. Embedding media into the real world allows for new immersive experiences that overlay information in a context- and location-aware way and provide a rich hands-free media experience. We are building a future vision of the Paradeplatz in Zürich called „**Augmented Paradeplatz**“. In 2019 we developed a content creation pipeline that **allows everyone to create rich AR content on Paradeplatz**. Besides, we are building a system that **automatically places flat 2D content** (articles, tickers, ads) within the real world as virtual billboards. We are taking into account the 3D geometry of a place, where a user is standing, and where the content is most visible. We developed an initial prototype that provides **responsive design in AR**.



Building a Swiss Voice Assistant

Voice assistants are gaining importance as a human-computer interface in our lives. Millions of users already use voice assistants to get information about the current weather or traffic, to listen to the news, to play music, and to control their smart home. However, **none of today's assistants speaks or understands the various dialects in Switzerland**, thus making communicating with them feel unnatural. In this project, we are building the first voice assistant that can speak different Swiss German dialects. In 2019 we built an initial **prototype that talks fluently „Bärndütsch“**. Currently, we are making improvements to the system to allow the synthesis of different speakers from the same dialect. In addition, we are collecting data from Swiss German speakers. This corpus will be the **most extensive publicly available data set of Swiss German** recordings with aligned text.



Federated Machine Learning

Media houses more and more rely on machine learning models to better personalize and target their content towards their audience. Machine learning is driven by the amount and quality of the available data. While today, **data is abundant, it is typically stored in data silos** and cannot be shared between companies. Federated learning has the potential to allow companies **to collaboratively build machine learning models** without the need to share data at any point. In this project, we develop a prototype of a federated learning system for our media partners to create better article recommendations and user understanding algorithms. In 2019, we **established the initial framework**, and we are already **building first machine learning models with two of our industry partners**.



Student projects

During the first year of the MTC, already **18 students** have been working on their Bachelor or Master theses within the center. **Eight students already finished their thesis in 2019**. With fresh ideas and a strong technical background, our students have been developing exciting prototypes to allow for various new applications. A showcase event highlighting the best from our student's work will be held on 23. January 2020.

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